



What is NUCLEONICA?

NUCLEONICA is a nuclear science web portal from the European Commission's Joint Research Centre. The portal provides a customisable, integrated environment and collaboration platform for the nuclear sciences using the latest internet "Web 2.0" dynamic technology.



Who is it for?

NUCLEONICA is aimed at professionals, academics and students working with radionuclides in fields as diverse as the life sciences (e.g. biology, medicine), the earth sciences (e.g. geology, meteorology) and the more traditional disciplines such as nuclear power, health physics and radiation protection, nuclear and radiochemistry, and astrophysics.



What can you do with NUCLEONICA?

Improve the quality of your work

Avoid the tedious task of searching for nuclear data. NUCLEONICA uses the most recently evaluated nuclear data from international datafiles.

Concentrate on the science rather than the programming!

NUCLEONICA provides you with user-friendly, reliable, and fast modules (for decay, dosimetry & shielding, range & stopping power, transport & packaging, reactor irradiation calculations, etc.)

Keep informed on nuclear developments

NUCLEONICA web crawlers scan hundreds of websites on an hourly basis to bring you the latest nuclear news.

Manage all your data in a single browser-based system

The web applications are browser and operating system independent and can be accessed with Internet Explorer, Mozilla-based browsers (Mozilla, Firefox, Netscape) and a variety of other browsers such as Opera, Safari, etc.

Provides the opportunity to introduce and share your expertise

with the NucleonicaWiki – a collaborative authoring tool in nuclear science.

Need to prepare a lecture or a training course?

NUCLEONICA is an ideal source of information, articles, weblinks, graphics, tables etc. Nucleonica will assist you in preparing training courses by providing an e-learning platform for education and training in the nuclear sciences.

Keep track of your recent activities

NUCLEONICA will "remember" your recent activities and preferences and store these in a Personalized Desktop.

Publication quality scientific graphs

at any time from any location. NUCLEONICA web driven graphics package is easy to use and delivers publication quality graphs in a variety of formats (GIF, JPG, EMF, etc.).

...and much more – see our Nucleonica Wiki:

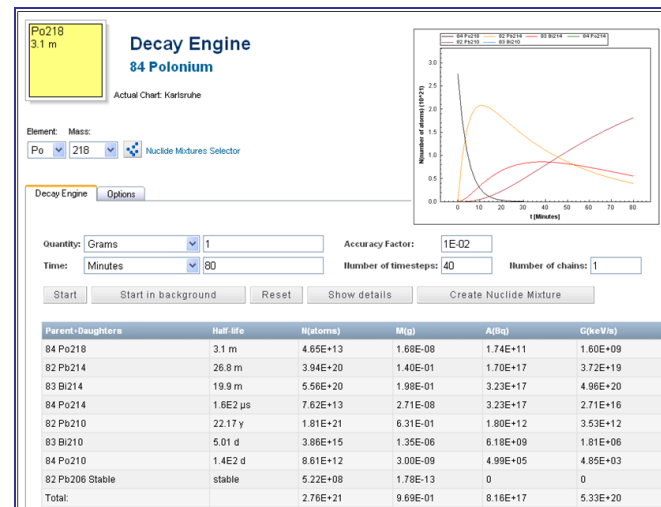
<http://www.nucleonica.net/wiki/index.php/Special:Allpages/Help>



Some Application Examples...

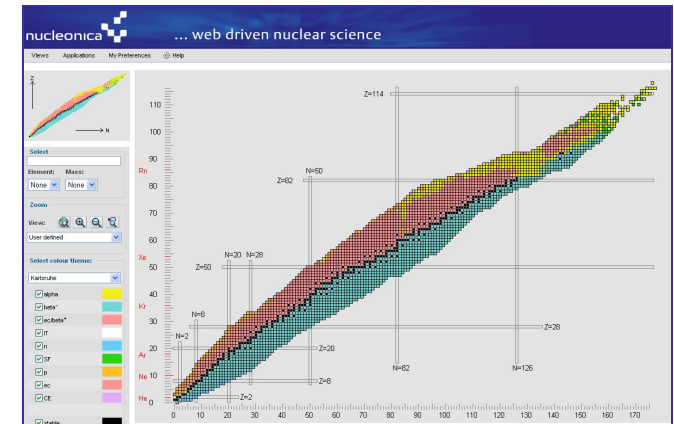
Decay Engine

Historically the first Nucleonica module, the Decay Engine provides an exact solution to the radioactive decay equations for a single nuclide or a nuclide mixture using Bateman's equations. Starting from an initial mass, activity or number of atoms, the evolution of the parent and daughter nuclides can be following in tabular or graphical form. Optional outputs include the gamma emission rates, ingestion and inhalation toxicities, isotopic powers for α , β , γ emissions, etc.



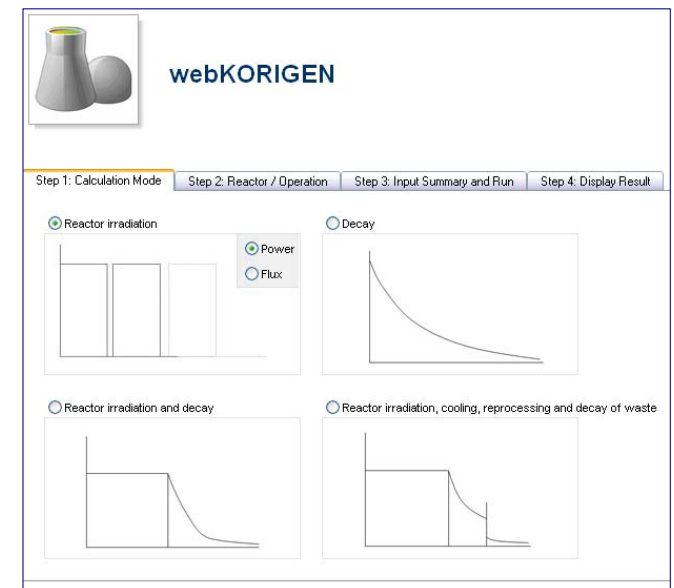
Nuclide Explorer

Is a powerful online nuclide chart which allows the user to display internationally evaluated data based on decay modes, half-lives, binding energies, spin & parity etc. Navigational tools allow zooming to a region or nuclide of interest, highlighting of daughters, decay chain, etc. The chart can be used to search for rare decay modes (e.g. cluster emission, beta delayed particles emission, etc.). The Nuclide Explorer is of great didactic value in education and training.



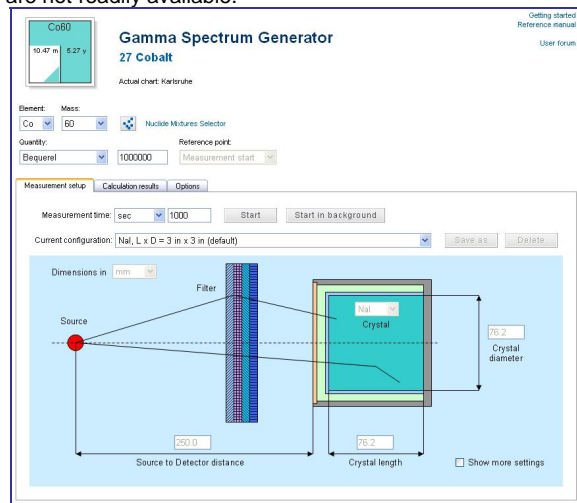
webKORIGEN

Starting with an initial reactor fuel or a target nuclide, webKORIGEN calculates the time evolution of nuclide densities changing due to decays and neutron-induced reactions in a PWR, BWR and FR and determines derived nuclear properties such as masses, activities, heat releases, etc.



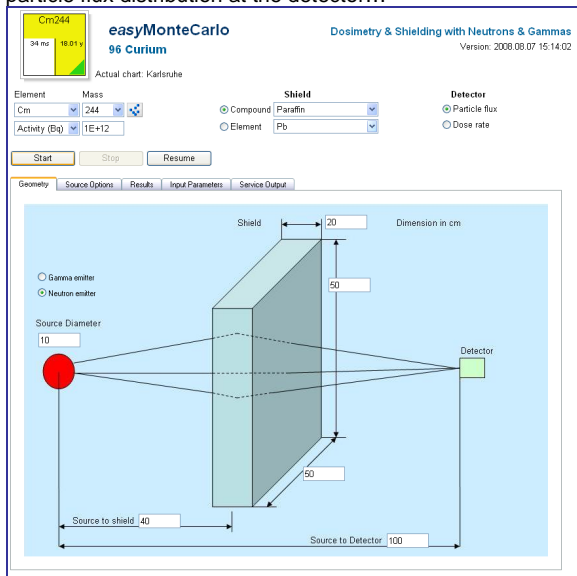
Gamma Spectrum Generator

... can be used to simulate the gamma spectrum of radioactive substances with a variety of detectors (e.g. NaI, HPGe, etc.). The simulator presents an efficient visual teaching aid that is especially useful in training facilities which have restrictions on the use of radioactive substances, or when sources of special interest are not readily available.



easyMonteCarlo

easy to use, fast, accurate dosimetry and shielding calculations for gammas and neutrons using Nucleonica's powerful Monte Carlo engine. Investigate the effects of self-attenuation in the source, build-up effects in the shield etc., on the dose rate and the particle flux distribution at the detector...



Registration as a NUCLEONICA user

The entire registration process involves three steps: Registration, Change Login and Password, and Activate your Profile. To register with Nucleonica, please proceed as follows:

Registration

- Go to the Nucleonica Homepage at www.nucleonica.net
- In the left hand window panel, click on Free Access and Register as a Nucleonica User.
- Read the end user's license agreement. Tick the checkbox to agree to the terms of the license agreement.
- Fill out your details on the form and enter the automatically generated code.
- Submit the form by pressing the "Register" button.

Change Login and Password

Shortly thereafter, you will receive an email with login and password. The login is the email address you specified in the registration process. The password is an automatically generated combination of letters and numbers. Both of these can be changed in Edit Preferences after logging in to Nucleonica for the first time.

Activate your Profile

Finally, to activate your profile, click on My Profile in the Start page. Tick the check boxes for the information fields to be visible to other users. Upload a photo in JPG or GIF format. For further information see:

http://www.nucleonica.net/wiki/index.php/Help:Register_as_a_Nucleonica_User



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NUCLEONICA: Science Networking & Applications Portal

